A STUDY OF MORPHOLOGY, PROVENANCE, AND MOVEMENT OF DESERT SAND SEAS IN AFRICA, ASIA AND AUSTRALIA

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Type I Progress Report
ERTS-A

a. Title: A Study of Morphology, Provenance, and Movement of Desert Sand Seas in Africa, Asia andAustralia

ERTS-A Proposal No.: SR 131

b. GSFC ID No. of P.I.: IN 402

c. Problems relating to progress:

The first images to arrive did not come until September 25, so actual examination of the product did not get underway until much later than anticipated. First study of the 70-mm bulk black-and-white positives proved discouraging because of our early inability to recognize with certainty some of the landforms and other features at the scale offered. Later attainment of pictures of higher quality for many areas and additional experience in determining which spectral band or bands are most useful to the project gradually overcame these initial difficulties. Transparencies at a more useful scale ($9\frac{1}{2}$ inches) have been ordered and are expected to facilitate analysis.

d. Discussion and plans:

As yet no films have been received for the desert areas of Great Victoria, An Nafud, Namib and Gobi, but some images have arrived from all of the other areas under study, including Takla Makan of China and the U.S.S.R. deserts, and we are generally pleased with their quality.

Mrs. Carol Breed and Mr. Lawrence Harris of this project attended the Remote Sensing Institute in Tucson, Ariz., at meetings on November 8-10 and while there discussed with other investigators some problems of interpreting remotely sensed data.

e. Results and application:

Examination of images to date has served to differentiate certain characteristic geomorphic forms and to establish criteria for the recognition of some types of natural substances in every test site. Work at present is concentrating on the development of a key for the recognition of various materials observed, and will be followed with tentative classifications of the sand bodies. Significant similarities and differences among the test sites are gradually becoming apparent, though coverage is as yet incomplete for all sites.

Also underway is the gathering of meteorological data for each of the 15 areas being studied, with the objective of correlating wind data with dune forms. The National Climatic Center in Asheville, North Carolina, has been contacted and is furnishing references to possible sources of local weather information in most of the countries concerned.

e. Results and application--Continued:

Detailed ground control is necessary in order to correctly apply ERTS data to base maps, and so topographic and geologic maps for each test site are being searched out. Also, a bibliography of various types of dune studies is being prepared to help determine applications of remote sensing techniques to this field of study. Aerial photographs and reliable maps of some of the more remote test sites are scarce; however, this very lack of previous data makes the ERTS photographs extremely valuable to geologists, for in these cases ERTS will provide for the first time reliable data on these areas. (Category 3G)

f. Reports:

No published material as yet.

g. Changes in operation:

It is anticipated that the size of our test sites can soon be cut down so that the number of frames requested can be materially reduced. As the incoming images are examined and studied, areas not critical to the dune study are being systematically eliminated and revised boundaries of the 15 principal sites are being determined.

Plans are being made to request a limited number of images covering selected well-known dune areas in the United States for comparison with the extensive dune areas abroad for which little ground information is currently available. Ground truth data will be relatively easy to obtain for most of the American sites.

h. Changes in standing order forms:

October 25, 1972. Memorandum to G. Richard Stonesifer, Technical Monitor.

Section 4.0 changed our Standing Order to the larger size black-and-white positive transparencies and also asked for black-and-white bulk positive prints. The latter, we believe, are no longer available as a Standing Order, but we would like to order retrospectively, one print of each frame from at least one cycle, after viewing the transparencies. (This matter was discussed with Technical Monitor by phone in advance).

i. ERTS Image Descriptor forms:

Dunes are the primary descriptor for each frame ordered retrospectively. Image descriptor forms will follow.

j. Changes in Data Request forms:

Retrospective Data Requests after viewing the 70-mm positive transparencies of these frames were as follows:

10/26/72	ADDDHHMMS Observation Identifier	E1053-05513
10/30/72	ADDDHHMMS Observation Identifier	E1040-06242
"	" " "	E1016-09151
"	" " "	E1053-07533
"	" " "	E1053-05511
"	" " "	E1016-09145
"	" " "	E1016-09154
"	" " "	E1059-06253
"	" " "	E1059-06251
"	" " "	E1059-06244
"	" " "	E1027-10180
"	" " "	E1027-10183
"	" " "	E1027-10185
10/31/72	ADDDHHMMS Observation Identifier	E1027-10194
"	" " "	E1027-10201
"	" " "	E1027-10215
"	" " "	E1027-10192
"	" " "	E1034-11004
"	" " "	E1011-00250
"	" " "	E1011-00255
"	" " "	E1011-00253
"	" " "	E1032-10501
"	" " "	E1035-00594
"	" " "	E1035-00582
"	" " "	E1035-00585
"	" " "	E1035-00591